

What is claimed is:

1           1. A Coriolis gyro (1'), having a first and a  
2           second resonator ( $70_1$ ,  $70_2$ ), which are each in the form of  
3           a coupled system comprising a first and a second linear  
4           oscillator ( $3_1$ ,  $3_2$ ,  $4_1$ ,  $4_2$ ), with the first resonator ( $70_1$ )  
5           being mechanically/electrostatically connected/coupled to  
6           the second resonator ( $70_2$ ) such that the two resonators  
7           can be caused to oscillate in antiphase with one another  
8           along a common oscillation axis ( $72$ ).

1           2. The Coriolis gyro (1') as claimed in claim 1,  
2           characterized in that the configurations of the first and  
3           of the second resonator ( $70_1$ ,  $70_2$ ) are identical, with the  
4           resonators ( $70_1$ ,  $70_2$ ) being arranged axially symmetrically  
5           with respect to one another with respect to an axis of  
6           symmetry ( $73$ ) which is at right angles to the common  
7           oscillation axis ( $72$ ).

1           3. The Coriolis gyro (1') as claimed in claim 1  
2           or 2, characterized in that the first oscillators ( $3_1$ ,  $3_2$ )  
3           are each connected by means of first spring elements  
4           ( $5_1 - 5_8$ ) to a gyro frame ( $7_1 - 7_{14}$ ) of the Coriolis gyro,  
5           and the second oscillators ( $4_1$ ,  $4_2$ ) are each connected by  
6           second spring elements ( $6_1 - 6_4$ ) to one of the first  
7           oscillators ( $3_1$ ,  $3_2$ ).

1                   4. The Coriolis gyro (1') as claimed in claim 3,  
2 characterized in that the second oscillators ( $4_1$ ,  $4_2$ ) are  
3 attached/clamped in at one end to the first oscillators  
4 ( $3_1$ ,  $3_2$ ) by means of the second spring elements ( $6_1$  -  $6_4$ )  
5 and/or the first oscillators ( $3_1$ ,  $3_2$ ) are attached/clamped  
6 in at one end to a gyro frame of the Coriolis gyro by  
7 means of the first spring elements ( $5_1$  -  $5_8$ ).

1                   5. The Coriolis gyro (1') as claimed in claim 3  
2 or 4, characterized by a device for production of  
3 electrostatic fields, by means of which the alignment  
4 angle of the first spring elements ( $5_1$  -  $5_8$ ) with respect  
5 to the gyro frame can be varied, and/or the alignment  
6 angle of the second spring elements ( $6_1$  -  $6_4$ ) with respect  
7 to the first oscillators ( $3_1$ ,  $3_2$ ) can be varied.

1                   6. The Coriolis gyro (1') as claimed in claim 5,  
2 characterized by

3                   - a device (10<sub>1</sub> - 10<sub>8</sub>, 11<sub>1</sub> - 11<sub>4</sub>) by means of  
4 which it is possible to determine first signals for the  
5 rotation rate and quadrature bias, which occur within the  
6 first resonator (70<sub>1</sub>), and second signals for the rotation  
7 rate and quadrature bias, which occur in the second  
8 resonator (70<sub>2</sub>),

9                   - control loops (60 - 67) by means of which the  
10 alignment/strength of the electrostatic fields is  
11 regulated such that the first and the second quadrature  
12 bias are each as small as possible, and

13                   - a computation unit, which uses the first and  
14 second signals to determine the rotation rate, and uses an  
15 in-phase component of the electrostatic fields which  
16 compensate for the first and second quadrature biases to  
17 determine the acceleration to be measured.

7. A method for selective or simultaneous measurement of rotation rates and accelerations using a rotation rate Coriolis gyro (1') which has a first and a second resonator ( $70_1$ ,  $70_2$ ) which are each in the form of a coupled system comprising a first and a second linear oscillator ( $3_1$ ,  $3_2$ ,  $4_1$ ,  $4_2$ ), with the rotation rates being determined by tapping and evaluation of the deflections of the second oscillators ( $4_1$ ,  $4_2$ ), having the following steps:

- the two resonators ( $70_1$ ,  $70_2$ ) are caused to carry out oscillations in antiphase with one another along a common oscillation axis ( $72$ ),

- the deflections of the second oscillators ( $4_1$ ,  $4_2$ ) are compared with one another in order to determine an antiphase deflection component which is a measure of the rotation rate to be measured and/or in order to determine a common in-phase deflection component, which is a measure of the acceleration to be measured,

- calculation of the rotation rate/acceleration to be measured from the in-phase deflection component/antiphase deflection component.

1                   8. The method as claimed in claim 7,  
2 characterized in that the common in-phase deflection  
3 component is determined as follows:

4                   - a first quadrature bias is determined which  
5 occurs within the first resonator ( $70_1$ ),

6                   - a second quadrature bias is determined which  
7 occurs within the second resonator ( $70_2$ ),

8                   - the first quadrature bias is calculated using  
9 the second quadrature bias in order to determine a common  
10 quadrature bias component which is proportional to the  
11 acceleration to be measured and represents the common in-  
12 phase deflection component.

1                   9. The method as claimed in claim 8,  
2 characterized in that electrostatic fields are produced in  
3 order to vary the mutual alignment of the first and second  
4 oscillators ( $3_1$ ,  $3_2$ ,  $4_1$ ,  $4_2$ ), with the alignment/strength  
5 of the electrostatic fields being regulated such that the  
6 first and the second quadrature bias are each as small as  
7 possible.